ABSTRACT

A semiconductor storage device includes a semiconductor substrate (11), a gate insulating film (12) formed on the semiconductor substrate (11), a single gate electrode (13) formed on the gate insulating film (12), two charge holding portions (61, 62) formed on both sides of the gate electrode (13), source/drain regions (17, 18) respectively corresponding to the charge holding portions (61, 62), and a channel region disposed under the single gate electrode (13). A memory function implemented by these two charge holding portions (61, 62) and a transistor operation function implemented by the gate insulating film (12) is separated from each other for securing sufficient memory function as well as easily suppressing short channel effect by making the gate insulating film (12) thinner. Also, the two charge holding portions (61, 62) formed on the both sides of the gate electrode (13) are separated by the gate electrode (13), which enables effective control of interference in rewrite operation. Further, appropriate setting of the voltage of the gate electrode (13), the voltage of one diffusion layer region (17), and the voltage of the other diffusion layer (18) enables selective injection of positive holes or electrons into the second charge holding portion (62) on the side of one diffusion layer region (18). Consequently, it becomes possible to

provide a semiconductor storage device enabling two-bit operation and facilitating miniaturization.